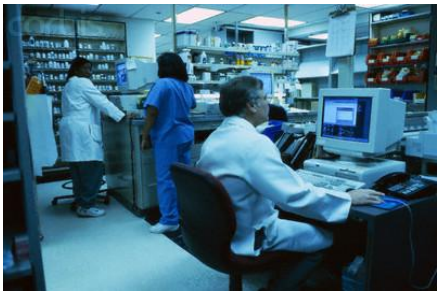
Health Information Technology Adoption by Kentucky Health Care Providers



2008

Preface

This report summarizes the state of electronic health record (EHR) adoption of health care providers in Kentucky as of July 2008. The survey and analysis work has been conducted by research faculty in the University of Kentucky College of Public Health.

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Introduction

The quality of health care often hinges on coordination and continuity of care. The Institute of Medicine report, *Crossing the Quality Chasm*, identified the need to **redesign health care processes** as an essential requirement to improve the quality of care and acknowledged the need for "clinicians to actively collaborate and communicate to ensure an appropriate exchange of information and coordination of care". The adoption of Electronic Health Records (EHRs) is regarded as key to patient safety and health care quality improvement. Studies of EHR use by physicians have estimated between 4 and 25% of practices are currently using an EHR[1, 2]. Few studies exist of EHR use by other health care providers. The most notable was a 2008 study by the California Health Foundation that reported data aggregated from several sources for hospitals, clinics, long term care, physicians and medical groups.[3]

Background and significance

The Kentucky eHealth Action Plan in 2007 set forth an objective "to facilitate statewide health information exchange". One of the actions to assist in meeting that goal was to conduct a statewide e-health inventory and needs assessment.

The objectives of the HIT adoption assessment were to identify (1) which providers across Kentucky are using health information technology, (2) what technology is used, (3) for what purpose the technology is used, i.e., electronic billing, electronic medical records, communications with other providers, and/or communication with patients, (4) perceived benefits of HIT, (5) barriers to HIT adoption, (6) what providers need to increase their use of health information technology, and (7) how Kentucky should move forward to an electronic health information environment.

Methods

Study Design. This cross sectional study of health information technology use consisted of (1) a mailed survey to a sample of licensed physicians (MDs and DOs) actively practicing in Kentucky, and (2) electronic surveys of pharmacists, hospitals, home health agencies, hospices, long term care facilities, optometrists, podiatrists, mental health programs, health departments and medical group practice managers through the collaboration of the professional associations for each of those entities. Face to face stakeholder interviews with selected members of the health care

providers mentioned above provided additional information about health information technology use in various regions of Kentucky.

Sample selection

Physicians: A mailing list of physicians (MDs/DOs) licensed and practicing in Kentucky was obtained through the Kentucky Board of Medical Licensure (N=10,027). From the original list, the following categories of physicians were deleted:

1) residents
2) retired physicians
3) emergency medicine physicians
4) faculty
5) hospital based physicians
6) public health physicians
7) government physicians
8) occupational medicine physicians
9) research physicians

These groups of physicians were deleted to obtain 1) a list of private practice physicians in Kentucky, and 2) unduplicated information regarding eHIT adoption. The sample was further reduced by deleting physicians practicing at member sites of the Kentucky Primary Care Association and the Kentucky Medical Group Manager Association. Representatives of physicians within these two organizations were surveyed electronically. A total of 3,702 printed surveys were mailed to physicians.

The study population for other health care providers included:

1) all Kentucky hospitals
2) all pharmacists that are members of the Kentucky Pharmacy Association practicing in Kentucky;
3) all members of the Kentucky Association of Health Care Facilities, a state association of long term care providers
4) members of the Kentucky Home Health Association
5) members of the Kentucky Association of Hospices
6) all regional mental health organizations
7) all podiatrists
8) all optometrists
9) members of the Kentucky Health Department Association

Data Collection

Surveys. Survey items for all health care provider surveys were developed by Drs. Carol Ireson and Martha Riddell based on a review of the literature and input from representatives of the various provider organizations. Print surveys were mailed to 3,702 Kentucky physicians. A cover letter from Dr. Carol Steltenkamp, co-chair of the Kentucky eHealth Network Board, explained the purpose of the survey. A postage paid return response envelope was included in the mailing.

Electronic surveys were sent to all other providers through collaboration with professional associations. These associations represented optometrists, hospitals, home health, hospice, mental health, medical group managers, podiatrists, pharmacists, primary care centers, and long term care. A cover letter explaining the survey, again from Dr. Steltenkamp, was sent electronically to each association along with a link to an electronic survey. Zoomerang was used for the electronic survey process. Each association sent a communication electronically to their members with the electronic survey information. The surveys included questions specific to the eHIT issues within each profession or organization. Where information was known regarding use of eHIT, those sites were excluded from the survey.

Stakeholder interviews. Stakeholder interviews were conducted to determine the extent of eHIT in selected populations and geographic areas. Thirteen interviews were held and included rural and urban healthcare providers, large systems, medical centers, rural health centers, and integrated delivery systems. Interview information was used to confirm the extent of eHIT throughout the individual organization and within specific regional areas.

Physician Practice Demographics

Five hundred and fifty responses were received from the 3702 print surveys. These 550 responses accounted for 1571 physicians representing 42.4% of the total. The survey envelopes were coded to match those returning surveys to the coded mailing list. Physicians were asked to report the number of physicians in their practice. The returned surveys were compared with others at the same address and the numbers of physicians reported from the surveys were compared. If more than one respondent reported the same number for that practice the duplicates were eliminated to assure that the numbers of physicians at the same address were not counted more than once.

Electronic surveys to Kentucky Medical Group Management Association members and Kentucky Primary Care Association members account for an additional 1,646 physicians. Table 1 describes the demographics of respondents overall and by EHR user status. Table 2 depicts the number of physicians, nurse practitioners, physician assistants and office visits reported. Appendix A depicts the geographic dispersion of physicians with EHRs in Kentucky counties for respondents. Appendix B depicts the geographic dispersion of physicians with EHRs in Kentucky counties for all physicians surveyed.

Table 1. Physicians Description of Practice

n=Number of responses	Overall n=609	Users n=239	Planners n=145	Nonplanners N=225
Solo primary care practice	21.3%	15.9%	14.5%	31.6%
Primary care group or partnership	20.4%	21.3%	25.5%	16.0%
Multi-specialty group or partnership	13.0%	16.3%	22.1%	3.6%
Solo specialty care practice	21.5%	18.4%	10.3%	32.0%
Single specialty group or partnership	21.2%	24.2%	26.2%	14.7%
Other	2.6%	3.8%	1.4%	2.2%

Table 2. Number of Physicians, NPs, PAs, and Office Visits per year represented by study participants

	Physicians	NP	PA	Visits per year
Overall	3178	313.5	238	147,376

Health Information Technology Adoption in Community Physician Practices

The survey requested information about the stage of EHR adoption in physician practices. Those who responded as having components of an EHR were classified as “users”. Those planning to implement an EHR were classified as “planners” and those with no plans of implementation were classified as “non-planners”. Figure 1 shows the stage of adoption for the 3178 physicians. Figure 2 displays the length of time physicians who are users have used an EHR. Table 3 outlines the timeframe for planners implementation of EHR.

Figure 1. Electronic Health Record Status, Total Physicians Represented in Study (N=3178)

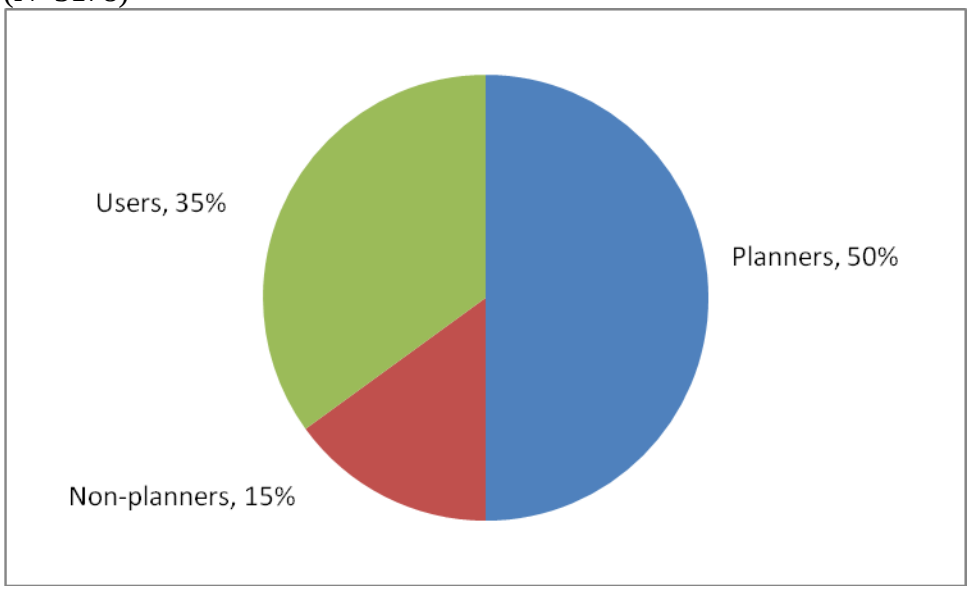


Figure 2. Length of Time Using an EHR System for Users

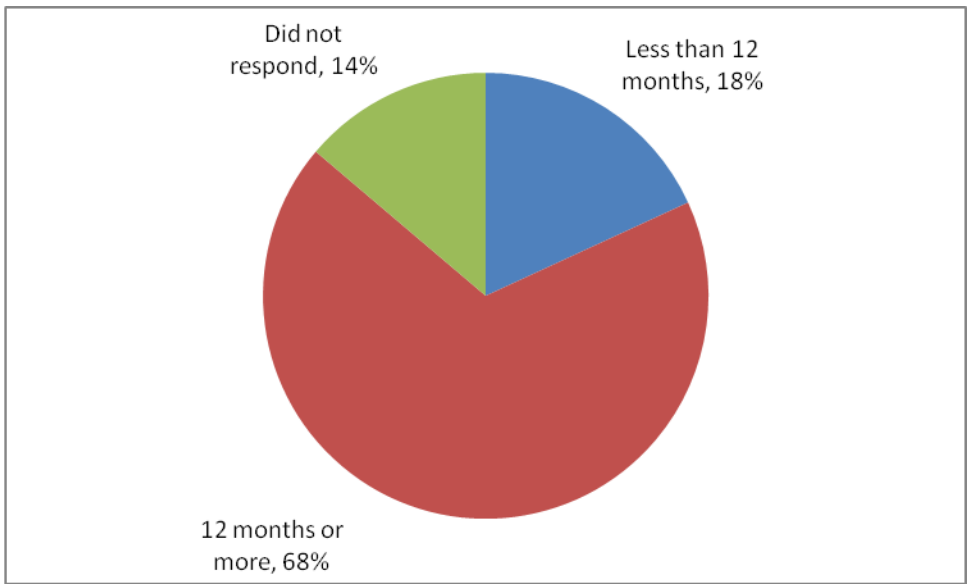


Table 3. Plans to Implement EHR by Physicians Without EHR

	Planners n=140	Non-planners n=222
Within the next 12 months	20.7%	0.0%
Within the next 1-2 years	42.1%	0.0%
Within the next 3-5 years	35.7%	0.0%
No specific plans	1.4%	87.8%
Other	0.0%	12.2%

Internet connection does not appear to be a barrier to EHR implementation. The percentage of users with broadband connections is not significantly higher than nonplanners. (Table 4)

Table 4. Internet Connection by Physician Stage of Adoption

	Overall N=3146 (%)	Users n=1107 (%)	Planners n=1576 (%)	Nonplanners n=464 (%)
Do not have internet connection	0.6	0.1	0.4	2.8
Broadband (i.e. DSL or cable modem or faster)	91.2	84.7	98.9	80.2
Dial-up modem connection	2.1	1.0	0.0	12.1
Don't know	5.8	14.2	0.4	4.1
Other	0.3	0.0	0.3	0.9

Percentage totals may not equal 100 due to rounding.

Perceived benefits of EHRS

The primary perceived benefit for users, planners and nonplanners is access to current patient data. Fewer users report the actualized benefits of disease management than planners perceived view of the potential benefit. Increased communication within the office is a greater benefit for users than perceived by planners. Non-planners overall see less benefits with nearly 40% reporting no perceived value in relation to the cost of EHRs. (Table 5)

Table 5. Physician Perceived Benefits to Adoption of EHRs
(n=number of respondents completing survey)

	Overall N=598 (%)	Users n= 229 (%)	Planners n=143 (%)	Nonplanners n=226 (%)
Access to current patient data	86.5	84.3	86.0	50.0
The ability to complete records from remote location	78.3	73.8	67.1	33.2
Accessibility of data regardless of setting or provider (interoperability)	77.1	72.5	65.0	39.8
Office process efficiency	78.8	74.2	72.7	39.4
Reduce administrative costs associated with practice	43.5	41.5	45.5	22.6
Increased communication within the office	68.1	64.2	49.0	20.4
Increased communication with the patient	39.0	35.4	41.3	14.6
Disease management	41.8	38.0	52.4	27.9
Ability to monitor and improve patient/population clinical outcomes	51.3	47.2	55.2	28.3
Cost reduction	36.8	33.6	38.5	16.8
Increased revenue	33.6	31.9	30.8	13.3
No perceived value (Benefits do not justify cost)	5.5	6.1	7.0	39.4

Barriers to EHR Adoption

The greatest barrier to adoption of EHRs reported by users, planners and non-planners is start-up financial costs. Although ongoing financial costs are perceived as a major barrier by non-planners (67%), fewer users (35%) report that as a major barrier. The greatest difference among respondents regarding major barriers was the view of non-planners (58%) who perceive lack of uniform standards within the industry as a major barrier. Users, planners and non-planners reported little difference in the perceived barriers of computer skills of staff and colleagues, computer technical support and lack of time to learn about systems. Over one-fourth of non-planners have concerns about privacy and security in contrast to 9% of planners and 6% of users. It is significant to note that 70% of users, 55% of planners and 40% of non-planners do **not** perceive privacy and security as a barrier. (Appendix C reports physicians perceived barriers to adoption by users, planners and non-planners.)

Benefits Experienced by Users of EHRs

Physicians who are currently using electronic health records report significant benefits to their practice. The greatest benefits to physician practices were improved access to medical record information and reduced transcription costs. Physicians (67%) rated the impact of EHR on improved charge capture as very or extremely beneficial. Physicians (60%) also reported reduced clinical and medication errors and improved workflow as significant benefits. (Table 6)

Table 6. Benefits of EHRs to Physician Users

	Not at all beneficial 1	2	3	4	Extremely beneficial 5
Reduce clinical and medication errors (n=207)	6.3%	7.7%	25.6%	29.5%	30.4%
Reduce transcription costs (n=201)	10.4%	8.0%	17.4%	15.9%	45.3%
Improve access to medical record information (n=205)	10.4%	8.0%	17.4%	15.9%	45.3%
Provide more services to patients (per visit) (n=201)	15.4%	10.0%	28.4%	22.4%	22.9%
Improve charge capture (n=202)	5.4%	5.9%	20.8%	35.6%	32.2%
Improve work flow (n=207)	10.1%	10.6%	18.4%	32.4%	29.0%
Improve patient communications (n=203)	10.8%	15.3%	27.6%	27.6%	18.7%

Facilitators to EHR Adoption

Clearly funding is seen as the greatest help to practices in all stages of adoption. Although it was not seen as a major barrier to adoption, technical support would be the greatest help for the ongoing use of EHRs for users. (Table 7)

Table 7. Greatest Help in Moving Your Practice to an EHR

	Internet Access	Funding	Technical Support	Other	Number of Respondents
Users	27%	59%	55%	20%	82
Planners	5%	63%	29%	18%	142
Non-Planners	3%	73%	26%	19%	211

RHIO and Health Information Exchange (HIE)

Only 13% of physician respondents are currently participating in a RHIO or HIE. Planners (9%) and non-planners (10%) reported participating in a health information exchange via accessing laboratory values. Overall a majority of respondents (53%) reported a low level of interest in participating in a RHIO or HIE. Overall 20% of respondents expressed moderately high or high interest in participating. Physicians perceived the barriers to developing RHIOs and HIEs to be financial sustainability (50%) and lack of fully developed technology (51%). There is relatively little difference in the views of physicians by stage of adoption.

Moving Kentucky Forward to a eHIT Environment

Physicians were asked to rate the following priorities to move Kentucky to an eHIT environment:

- funding to hospitals for EHRs
- funding for physicians for EHRs
- clinical messaging between providers
- claims based patient summary
- consumer health records
- RHIOs/HIEs

The clear priority for physicians was funding to physician practices (64%) for EHRs followed by funding to hospitals (16%) for EHRs. Clinical messaging between providers and consumer health records followed as low priorities (9% and 8% respectively). Lowest priorities were RHIOs or HIEs (5%) and claims based summary (3%). (Appendix D)

Health Information Technology Adoption in Hospital Based Physicians

Physicians who self-selected the category of "hospital based" in the licensure list were excluded from the mailed survey. The number of hospital based physicians with access to EHRs was determined from information on EHR implementation from the hospital surveys. Seventy three hospitals reported having fully or partially implemented an EHR. Hospital based physicians at these seventy three hospitals total 1460 physicians excluding University of Kentucky and University of Louisville hospital based physicians. (Appendix E)

Health Information Technology Adoption in Hospitals

Kentucky has 120 hospitals including 102 acute care hospitals, 11 mental/behavioral health hospitals, 5 rehabilitation hospitals, and 2 long term acute care facilities. Sixty-five responses to an electronic survey represented 83 hospitals or 69% of Kentucky's licensed hospitals. The 83 hospitals include two mental health facilities and one long term acute care facility. (Appendix F)

Purpose of technology use:

- 96% have implemented HIT in patient accounts
- 78% use an electronic patient scheduling system
- 88% of hospitals are in some stage of implementing an Electronic Health Record (EHR)
- 23% of hospitals have fully implemented an EHR
- 76% of hospitals with an EHR are accessible in on site clinics
- 67% are accessible in offsite clinics
- 74% provide access to on-site physician offices
- 67 % provide access to off-site physician offices

Table 8. Hospital Use of or Plan to Use HIT for Clinical Functions

	YES	NO
Physician Notes	69%	31%
Nursing Notes	88%	12%
MAR (Medication Administration Record)	88%	12%
Computerized Physician Order Entry	68%	32%
Electronic Prescribing to External Pharmacies	48%	52%

Barriers to beginning or expanding use of computer technology (top three)

- 63% rated initial cost of technology as a ***major*** barrier
- 42% rated ongoing costs of hardware/ software as a ***major*** barrier
- 32% rated acceptance of technology by clinical staff as a major barrier

Type of internet connection:

- 99% have Broadband (i.e. DSL or Cable Modem) or Faster Connection (i.e. T1 or T3 line)

Participation in local/regional arrangement to share electronic patient information

- 35% of hospitals participate in some type of health information exchange
- 34% of those who do not are interested in participating in the future
- 57% cited financial sustainability as a barrier to developing RHIOs/HIEs
- 57% also cited the lack of fully developed technology to support RHIOs

How Kentucky should move forward to an eHIT environment

- 66% rated funding to hospitals for EHRs as the top priority

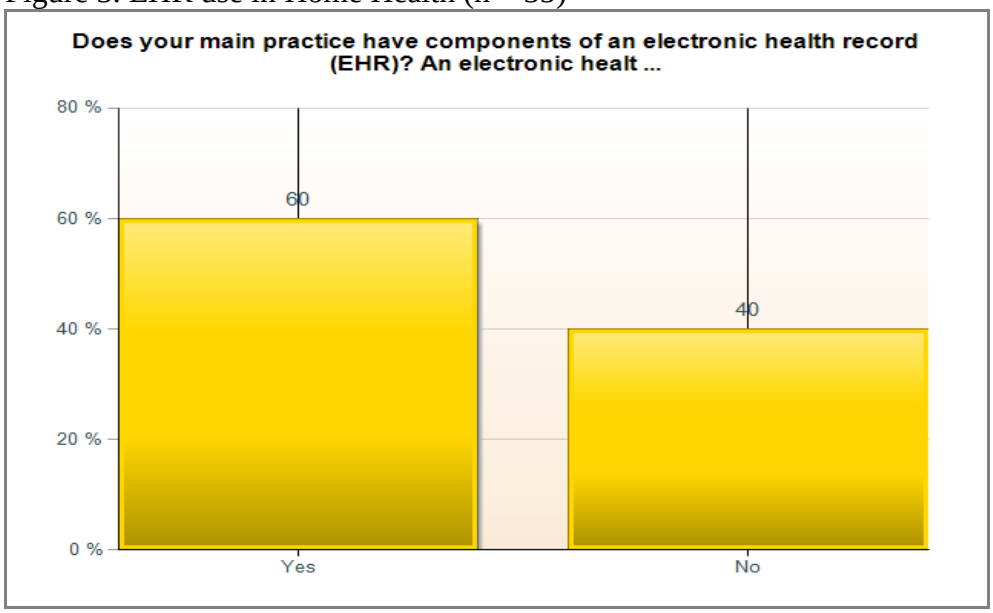
Health Information Technology Adoption in Home Health

One hundred twelve licensed home health agencies provide homecare services in the Commonwealth of Kentucky. Individuals representing 34 licensed home health agencies responded to the survey (response rate = 30%; 34/112). One infusion company responded and is included in this report. Responding agencies provide services in 89 Kentucky counties. (Appendix G) Key findings include:

Purpose of technology use:

- 46% use computerized scheduling
- 60% have components of an Electronic Health Record (EHR)

Figure 3. EHR use in Home Health (n = 35)



What EHR system is used:

- A variety of systems were noted with Horizon HomeCare (McKesson) and Ndoc noted most frequently.

Type of internet connection:

- 83% have Broadband (i.e. DSL or Cable Modem) or Faster Connection (i.e. T1 or T3 line)

Perceived benefits of EHR (top three)

- 94% rated access to current patient data as a benefit
- 88% reported care management as a benefit
- 85% rated ability to monitor and improve patient/population clinical outcomes as a benefit

Barriers to beginning or expanding use of computer technology (top three)

- 60% rated start up financial costs as a ***major*** barrier
- 40% rated ongoing financial costs as a ***major*** barrier
- 75% rated training and productivity loss as a ***major or minor*** barrier

Interest in participating in a RHIO/HIE

- 27% reported high/moderately high interest in participating in a RHIO/HIE
- 44% reported low/moderately low interest in participating in a RHIO/HIE

What is needed to enhance HIT adoption

- 78% rated funding as the greatest help in moving to an EHR

How KY should move forward to an eHIT environment

- 58% rated funding for EHR for healthcare providers as the top priority
- 45% rated funding for hospitals for EHR as the top priority
- 36% rated clinical messaging between providers as the top priority

Health Information Technology Adoption in Long Term Care

Thirty-seven respondents representing 36 long term care facilities responded to the eHIT adoption survey (response rate = 14%; 36/250). Key findings include:

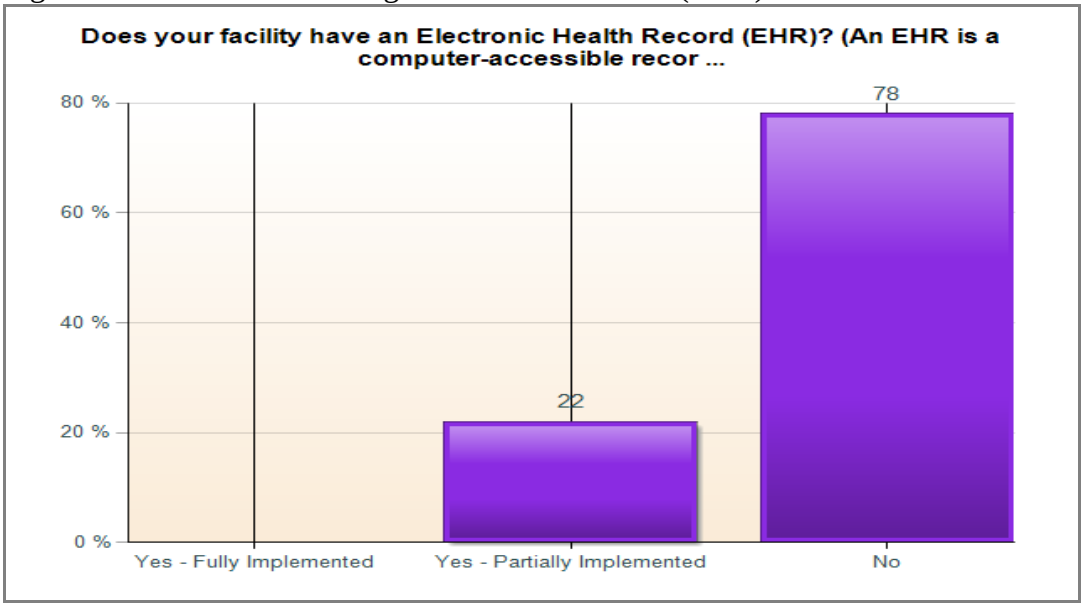
Type of internet connection:

- 94% have Broadband (i.e. DSL or Cable Modem) or Faster Connection (i.e. T1 or T3 line)

Purpose of technology use:

- 86% of facilities use IT in patient accounts and 83% of facilities use IT for Admissions and Censes
- 78% of centers ***do not*** have components of an Electronic Health Record (EHR)

Figure 4. Use of EHR in Long Term Care Facilities (n=36)



Barriers to beginning or expanding use of computer technology (top three)

- 58% rated initial cost of IT investment as a ***major*** barrier
- 43% rated ability to support ongoing cost of hardware and software as a ***major*** barrier
- 88% rated interoperability of hardware and software with the current system as a ***major or minor*** barrier
- 88% rated availability of well-trained clinical staff for process redesign as a ***major or minor*** barrier

Interest in participating in a RHIO/HIE

- 36% reported high/moderately high interest in participating in a RHIO/HIE
- 44% reported low/moderately low interest in participating in a RHIO/HIE

How KY should move forward to an eHIT environment

- 22% rated clinical messaging between providers as the top priority
- 45% rated funding for physicians for EHR as the top priorities
- 38% rated consumer health record as the top priorities

Health Information Technology Adoption in Hospices

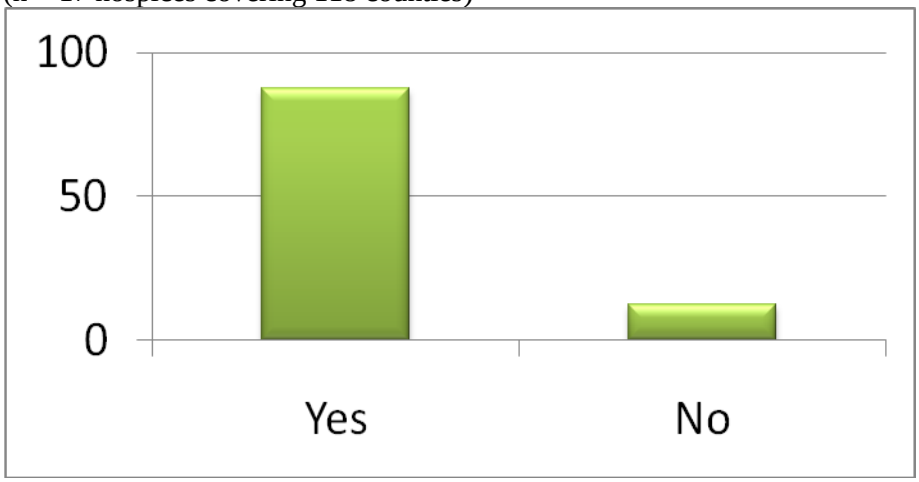
Twenty hospices provide end of life care for the 120 counties in Kentucky. Seventeen hospices responded to an electronic or mailed survey for an 86% response rate. Hospices report the highest rate of adoption of any health care provider group with 86% of hospices using an EHR. (Appendix H)

Key findings include:

Purpose of technology use:

- 33% of centers use computerized scheduling although this capability is less important to hospice agencies
- 84% of centers have components of an Electronic Health Record (EHR)

Figure 5. Percent of Hospices with an EHR
(n = 17 hospices covering 118 counties)



What EHR system is used:

- 47% use Suncoast software

Type of internet connection:

- 100% have Broadband (i.e. DSL or Cable Modem) or Faster Connection (i.e. T1 or T3 line)

Perceived benefits of EHR (top three)

- 100% rated access to current patient data and office process efficiency as a benefit
- 88% rated office process efficiency as a benefit
- 82% rated ability to complete records from a remote location as a benefit and accessibility regardless of location

Barriers to beginning or expanding use of computer technology (top three)

- 31% rated ongoing financial costs as a ***major*** barrier
- 25% rated technical limitations of systems and training and productivity loss as **major** barriers

What is needed to enhance HIT adoption

- 90% rated funding as the greatest help in moving to an EHR

How Kentucky should move forward to an eHIT environment

- 44% rated funding as the most important

Health Information Technology Adoption in Community Mental Health Centers

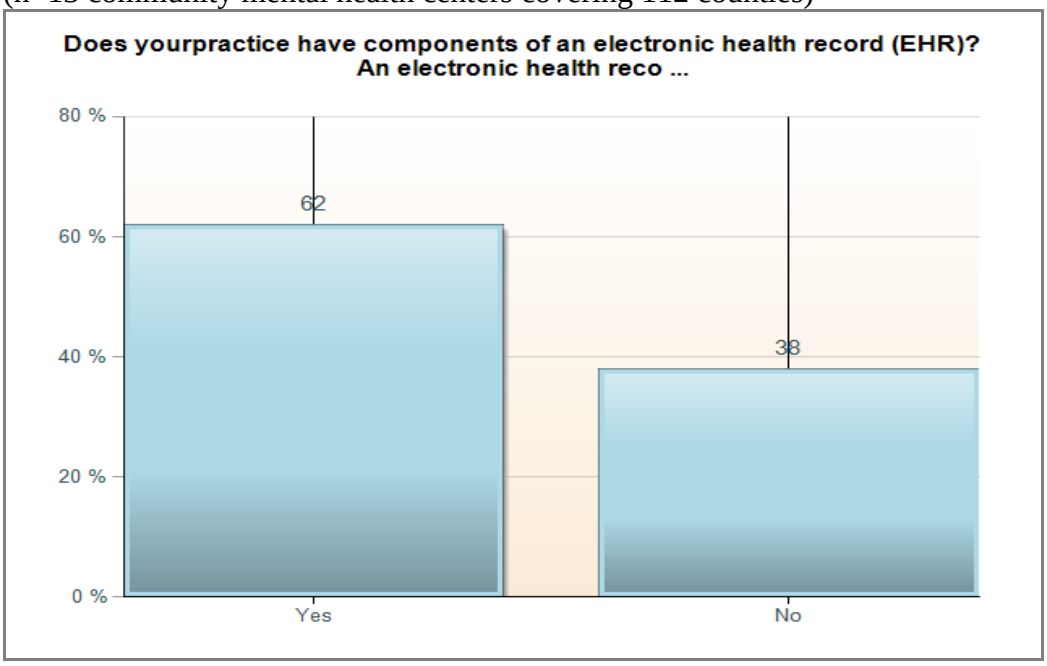
Fourteen community mental health centers coordinate mental health services throughout Kentucky. A broad spectrum of mental health services are offered through these centers and their 8,000+ mental health professionals.

Thirteen centers providing services to 112 Kentucky counties responded to the HIT adoption survey (response rate = 93%; 13/14). Key findings include:

Purpose of technology use:

- 92% of centers use computerized scheduling
- 62% of centers have components of an Electronic Health Record (EHR)

Figure 6. Percent of EHR Use in Community Mental Health Centers (n=13 community mental health centers covering 112 counties)



What EHR system is used:

- Two respondents each use Avatar and Lavendar & Wyatt EHR systems

Type of internet connection:

- 100% have Broadband (i.e. DSL or Cable Modem) or Faster Connection (i.e. T1 or T3 line)

Perceived benefits of EHR (top three)

- 92% rated access to current patient data as a benefit

- 92% rated ability to complete records from a remote location as a benefit
- 92% rated office process efficiency as a benefit

Barriers to beginning or expanding use of computer technology (top three)

- 77% rated start up financial costs as a ***major*** barrier
- 77% rated ongoing financial costs as a ***major*** barrier
- 100% rated lack of computer skills by colleagues/staff as a major or minor barrier

Interest in participating in a RHIO/HIE

- 30% reported high/moderately high interest in participating in a RHIO/HIE
- 20% reported low/moderately low interest in participating in a RHIO/HIE

What is needed to enhance adoption

- 90% rated funding as the greatest help in moving to an EHR

How KY should move forward to an eHIT environment

- 64% rated funding for EHR for providers as the top priority
- 43% rated consumer health records as a top priority
- 34% rated clinical messaging between providers as a top priority

Health Information Technology Adoption in Public Health Departments

Fifty-six health departments serve Kentucky's 120 counties with 15 district departments serving 79 counties and 41 independent county health departments. Nine health departments responded including 3 district health departments covering 20 counties and 6 local county health departments.

HIT Technology Use

- 33% of the health departments responding have an EHR and one is currently testing a product.

What EHR system is used: Custom Data Processing (CDP)

Type of internet connection:

- 100% have broadband

Perceived benefits of EHR (top three)

- 89% cited access to current patient data and ability to complete records from a remote location
- 78% cited accessibility of data regardless of setting
- 78% cited office process efficiency

Barriers to beginning or expanding use of computer technology (top three)

- 67% of health department rated start up financial costs as a **major** barrier
- 44% rated lack of uniform standards within the industry as a **major** barrier
- 33% rated ongoing financial costs as a **major** barrier

Participation in local/regional arrangement to share electronic patient information

- 11% of respondents are participating in a regional health information exchange

- 66% of respondents have a high interest in participating in a regional health information exchange

How Kentucky should move forward to an eHIT environment

- 50% rated funding for physician practices as the top priority

Health Information Technology Adoption by Other Health Care Providers

Optometrists

Three hundred ninety optometrists practicing in Kentucky received the survey, either through an electronic link or through distribution of a paper survey at the spring Kentucky Optometric Association meeting. Forty-two optometrists completed the survey (response rate = 11%; 42/390). Key findings include:

Purpose of technology use:

- 38% of optometrists ***do*** have components of an Electronic Health Record (EHR)
- 67% of optometrists use computerized scheduling

Type of internet connection:

- 92% have Broadband (i.e. DSL or Cable Modem) or Faster Connection (i.e. T1 or T3 line)

Perceived benefits of EHR (top three)

- 74% rated access to current patient data as a benefit
- 71% rated office process efficiency as a benefit
- 42% rated increased communication with the patient, disease management, and ability to monitor and improve patient/population clinical outcomes as a benefit

Barriers to beginning or expanding use of computer technology (top three)

- 57% rated start-up financial costs as a ***major*** barrier
- 80% rated ongoing financial costs as a ***major or minor*** barrier
- 76% rated computer technical support, lack of time to acquire knowledge about systems, and training and productivity loss as a ***major or minor*** barrier

Interest in participating in a RHIO/HIE

- 14% reported high/moderately high interest in participating in a RHIO/HIE
- 61% reported low/moderately low interest in participating in a RHIO/HIE

What is needed to enhance adoption

- 53% rated funding as the greatest help in moving to an EHR

How KY should move forward to an eHIT environment

- 50% rated funding for EHR for providers as the top priority
- 48% rated clinical messaging between providers as a top priority
- 43% rated funding for EHR to hospitals as a top priority

Podiatrists

Ninety eight podiatrists practice in Kentucky with eleven podiatrists responding to the survey (response rate = 11%; 11/98). Key findings include:

Purpose of technology use:

- 45% of podiatrists have components of an Electronic Health Record (EHR)
- 82% of podiatrists use computerized scheduling

Type of internet connection:

- 100% have Broadband (i.e. DSL or Cable Modem) or Faster Connection (i.e. T1 or T3 line)

Perceived benefits of EHR (top three)

- 73% rated access to current patient data as a benefit
- 73% rated office process efficiency as a benefit
- 73% rated cost reduction and reduction of administrative costs associated with practice as a benefit

Barriers to beginning or expanding use of computer technology (top three)

- 82% rated start-up financial costs as a ***major*** barrier
- 82% rated lack of uniform standards within the industry as a ***major*** barrier
- 55% rated ongoing costs as a ***major*** barrier

Interest in participating in a RHIO/HIE

- 11% reported high/moderately high interest in participating in a RHIO/HIE
- 55% reported low/moderately low interest in participating in a RHIO/HIE

What is needed to enhance adoption

- 70% rated funding as the greatest help in moving to an EHR

How KY should move forward to an eHIT environment

- 90% rated funding for EHR for providers as the top priority

Pharmacists. Electronic surveys were sent to members of the Kentucky Pharmacy Association by the executive director of the association. Several follow-up electronic reminders resulted in only 13 pharmacists completing the on line survey. Print surveys were also distributed at the KyPA annual conference and five surveys were returned. The final sample was too small to be representative; therefore analysis of the pharmacist data could not be completed.

Stakeholder Interviews

Stakeholder interviews were conducted to determine the extent of eHIT in selected populations. More than 13 interviews were held and included rural and urban healthcare providers, large hospital systems, medical centers, rural health centers, physician groups and integrated delivery systems. Interview information was used to confirm the extent of eHIT throughout the individual organization and within specific regional areas.

Key themes obtained through the interviews include:

- Electronic Medical Records are at least partially implemented within hospitals, or plans are in place for implementation in the next 1-3 years.

  As one interviewee noted, "New doctors don't know how to use paper." Almost all hospitals and larger healthcare organizations had elements of electronic health records in operation. Most were implementing a multi-year strategic plan for a fully functional EHR.

- Access by physicians on hospital staffs to patient information (through Web access/portals) appears common.

  Healthcare organizations are receiving positive comments from physicians who can access information on hospitalized patients from anywhere in the world. Physicians can "round" on patients prior to setting foot in the hospital, thus saving time previously spent reviewing charts once the physician arrived at the facility. Most hospitals provide access to hospitalized patient information by physician offices, with privacy and security training and safeguards in place.

- Access by patients to personal health information (through healthcare organization Web access/portals) is very limited. Plans to provide this access are also limited.

  Several healthcare organizations have considered providing access by patients to personal health information. Though a few organizations do have elements of patient access to electronic personal health information, this initiative is generally rated a lower priority within healthcare organizations. Patients do not appear to be actively lobbying for this access in most locations.

- Connectivity across borders is critical for providers in several Kentucky healthcare organizations.

  Several larger Kentucky healthcare organizations are located in border counties with significant market share in multiple states. Some organizations currently have connectivity with ambulatory clinics in neighboring states.

- ePrescribing is generally not happening.

  Stakeholder interviews confirmed survey information that e-prescribing is not a common practice.

- Health Information Exchange (HIE) is occurring in selected communities. This exchange may include connectivity with staff physicians, health departments, long-term care facilities, referring physicians, home health care, laboratories, EMS and diagnostic centers.

  A wide spectrum of HIE initiatives are occurring as "natural experiments" in specific communities. RHIOs, though limited in number, are in various stages of development ranging from planning stages to a fully functional regional health information exchange with physicians, hospitals, nursing homes, public health departments, laboratories, and diagnostic imaging centers. Concurrently, innovative healthcare organizations in mid-sized Kentucky cities are also connecting electronically to nursing homes, public health departments, home health agencies, EMS, referring physicians, and university medical centers.

- Solo and smaller physician practices and smaller hospitals may be under-represented in this survey due to having no plans to transition to electronic health records.

  Individualized efforts were made to obtain survey data from smaller, rural healthcare providers. Feedback from these efforts noted that several providers were not interested in completing the survey as they had no plans to transition to an electronic health record.

Summary and Conclusions

Status of EHR adoption in Kentucky:

- Physician EHR users represent 35% of the 3,178 community physicians surveyed.
- Hospital EHR users represent 69% of Kentucky's licensed hospitals.
- Hospice EHR users represent 84% of Kentucky hospices.
- Community Mental Health Center EHR users represent 58% of Kentucky's community mental health centers.
- Home Health Agency EHR users represent 19% of Kentucky's licensed home health agencies.

Major Benefits of EHR adoption:

- Access to current patient data
- Reduced transcription costs
- Improved charge capture

Major Barriers to EHR adoption:

- Start up costs
- Ongoing costs
- Technical support

The priorities for moving Kentucky to increased EHR adoption are funding to providers and hospitals for EHR. There is a low level of interest in RHIOs, HIEs and claims based patient summaries in all provider groups.

This large study suggests that Kentucky physicians report a much higher rate of EHR adoption than that reported in other states and nationally. This may be related to how the question was structured. Solo primary care or solo specialty practices represent those most likely to not have an EHR or future plans for implementing one. The findings also suggest that the rural areas of Kentucky are adopting EHRs and in that some rural areas, there appears to be a synergy of EHR adoption.

Acknowledgements

The authors would like to acknowledge the support of the following organizations and individuals:

Kentucky Hospital Association

Kentucky Medical Association

Kentucky Home Health Association

Kentucky Association of Regional Programs

Kentucky Association of Health Care Facilities

Kentucky Optometric Association

Kentucky Association of Hospices

Kentucky Podiatric Medical Association

Kentucky Medical Group Management Association

Kentucky Primary Care Association

Kentucky Pharmacists Association

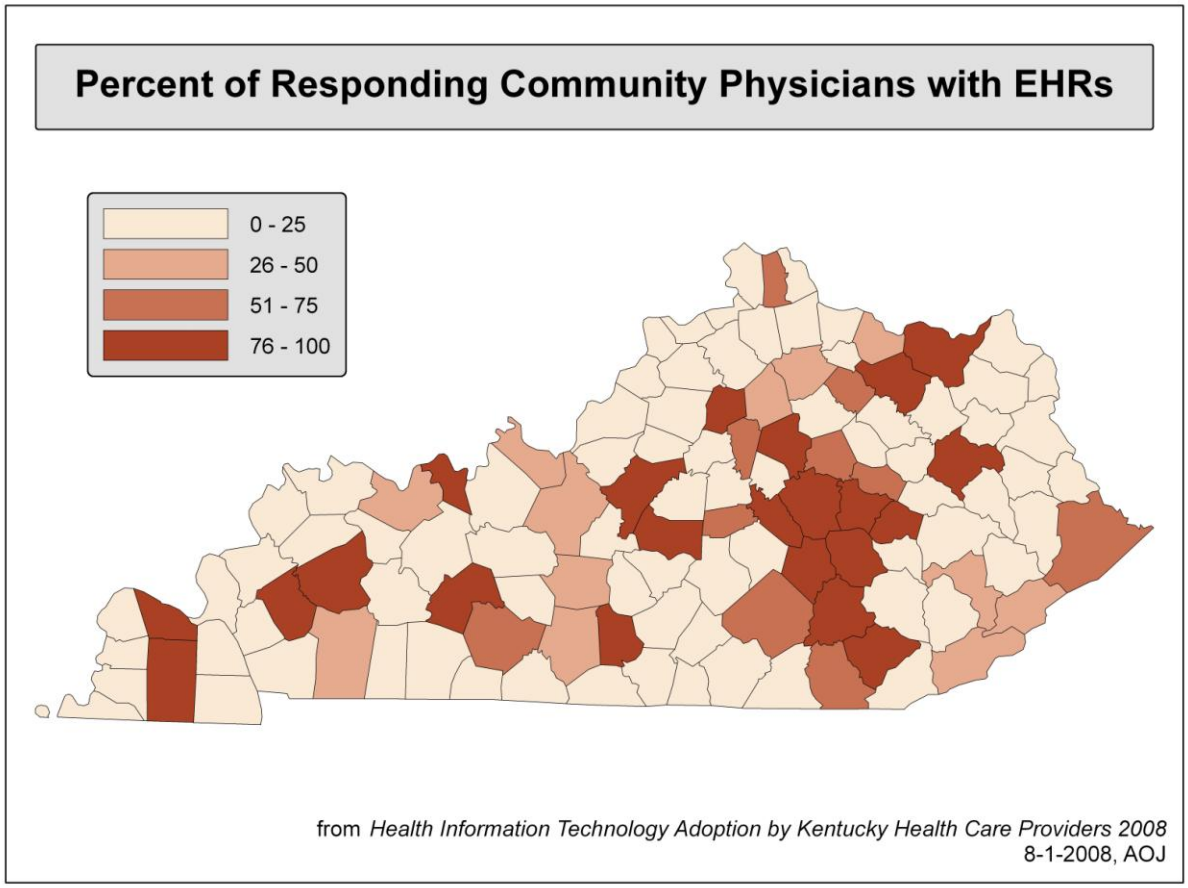
Kentucky Health Department Association

Health Care Excel

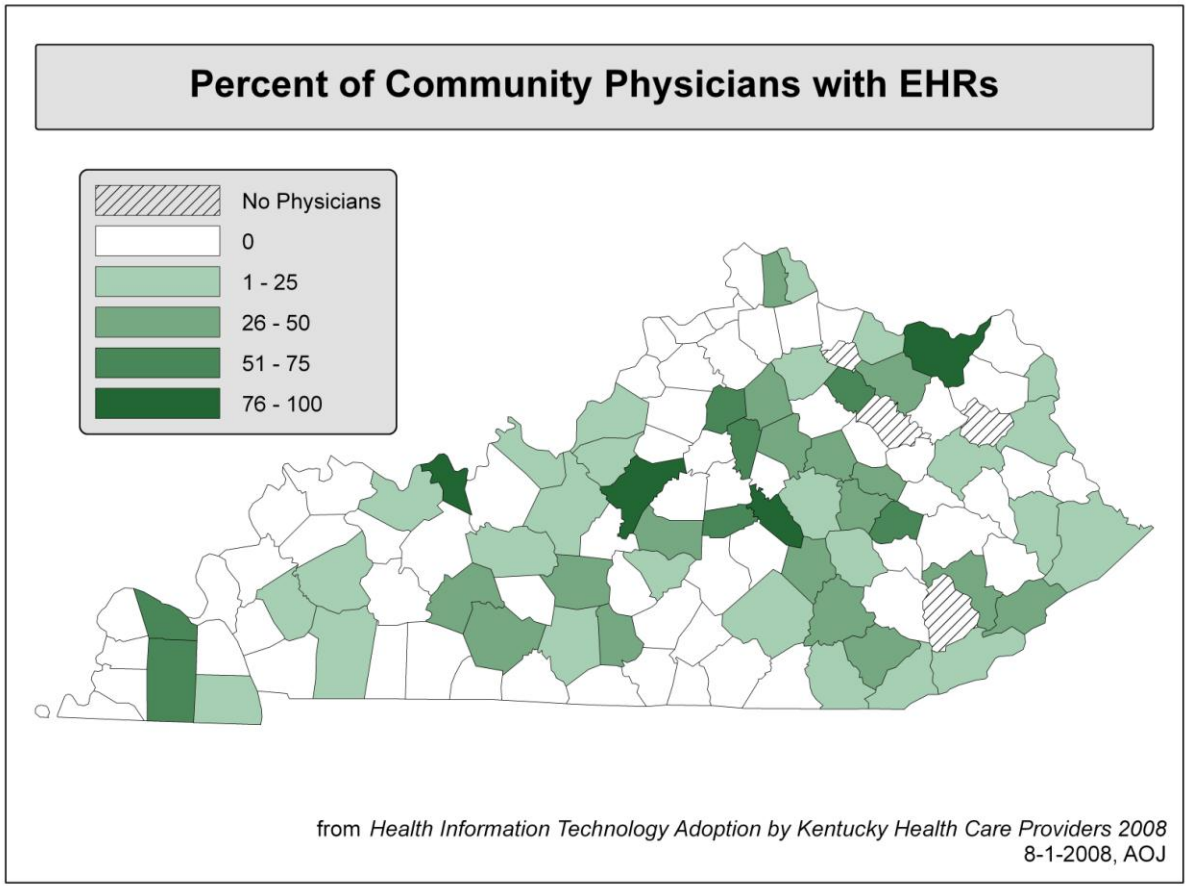
HIT Adoption Committee Members

Multiple Individuals who provided information through stakeholder interviews

Appendix A


Percent of Responding Community Physicians with EHRs
0 - 25
26 - 50
51 - 75
76 - 100
from Health Information Technology Adoption by Kentucky Health Care Providers 2008
8-1-2008, AOJ

Appendix B


Percent of Community Physicians with EHRs
No Physicians
0
1 - 25
26 - 50
51 - 75
76 - 100
from Health Information Technology Adoption by Kentucky Health Care Providers 2008
8-1-2008, AOJ

Appendix C. Physician Perceived Barriers to Adoption of EHRs (n=number of survey responses)									
	Major Barrier			Minor Barrier			Not a barrier		
	Users (%)	Planners (%)	Nonplanners (%)	Users (%)	Planners (%)	Nonplanners (%)	Users (%)	Planners (%)	Nonplanners (%)
Computer skills of you and/or colleagues/staff	12.8 n=220	9.2 n=142	13.9 n=216	39.7 n=220	51.4 n=142	37.5 n=216	47.5 n=220	39.4 n=142	44.4 n=216
Computer technical support	21.2 n=218	18.6 n=140	25.7 n=222	38.2 n=218	42.1 n=140	43.7 n=222	40.6 n=218	39.3 n=140	26.1 n=222
Lack of time to acquire knowledge about systems	24.1 n=213	29.3 n=140	31.4 n=223	43.9 n=213	51.4 n=140	43.5 n=223	32.1 n=213	19.3 n=140	21.1 n=223
Start-up financial costs	53.7 n=215	64.0 n=139	82.0 n=228	24.3 n=215	30.9 n=139	11.4 n=228	22.0 n=215	5.0 n=139	1.3 n=228
Ongoing financial costs	34.7 n=217	37.9 n=140	67.4 n=227	41.7 n=217	47.9 n=140	24.7 n=227	23.6 n=217	14.3 n=140	3.1 n=227
Training and productivity costs	29.0 n=215	37.6 n=141	51.1 n=227	43.5 n=215	53.2 n=141	39.6 n=227	27.6 n=215	9.2 n=141	4.4 n=227
Physician skepticism of EHRs	11.6 n=216	23.9 n=142	33.6 n=223	34.9 n=216	35.2 n=142	30.9 n=223	53.5 n=216	40.8 n=142	30.9 n=223
Privacy and security concerns	5.6 n=216	9.2 n=141	26.4 n=227	24.7 n=216	36.2 n=141	28.6 n=227	69.8 n=216	54.6 n=141	40.1 n=227
Lack of uniform standards in industry	25.8 n=214	35.5 n=138	57.6 n=224	42.3 n=214	38.4 n=138	29.0 n=224	31.9 n=214	26.1 n=138	8.9 n=224
Technical limitations of system	18.6 n=217	24.8 n=137	34.4 n=221	47.0 n=217	43.1 n=137	45.7 n=221	34.4 n=217	23.1 n=137	14.9 n=221

Appendix D

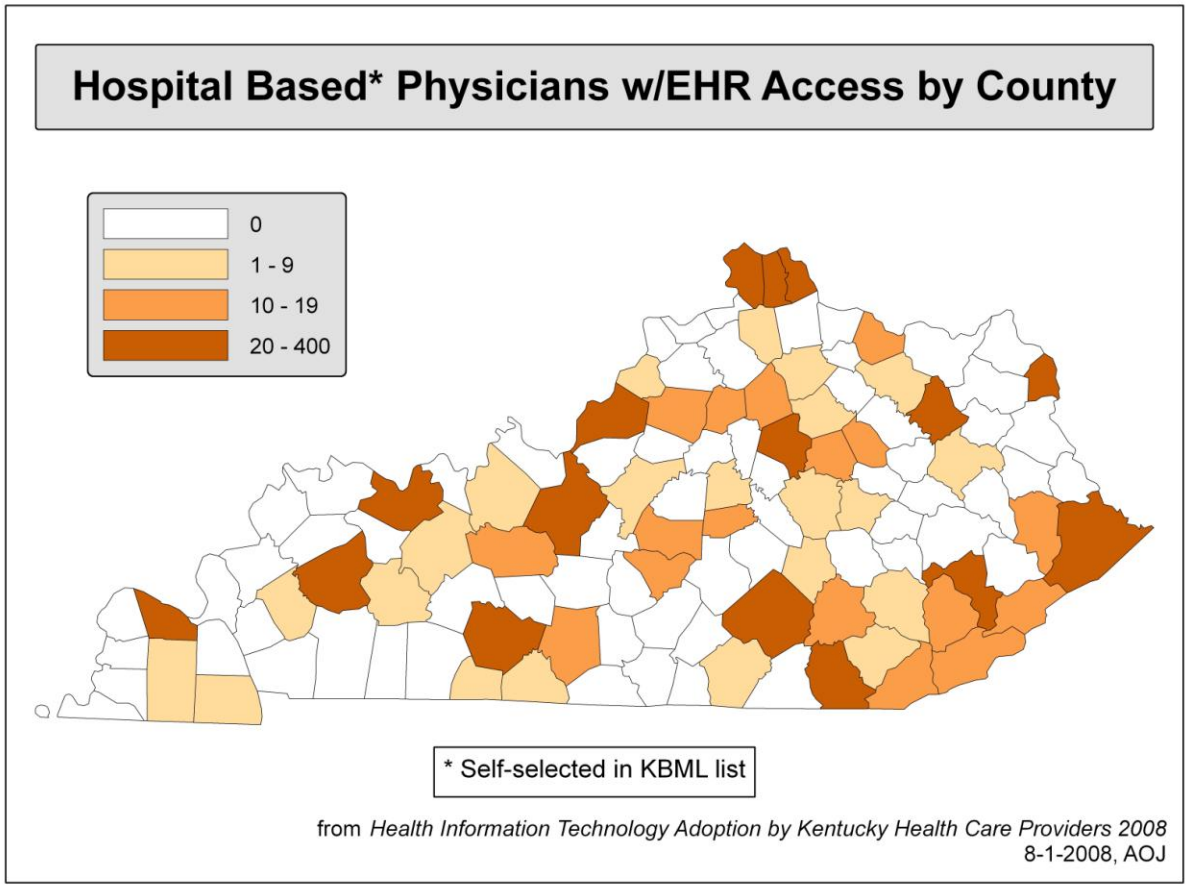
Responding Physicians Rate Important Factors for Kentucky to Move Toward an Electronic Health Record

		Highest Priority 1	2	3	4	5	Lowest Priority 6
Funding to hospitals for EHR	Overall n=392	15.6%	36.0%	9.9%	10.2%	12.0%	14.8%
	Users n=163	11.7%	34.4%	12.9%	14.1%	14.1%	12.9%
	Planners n=97	23.7%	39.2%	8.2%	6.2%	21.4%	10.3%
	Nonplanners n=132	14.3%	35.6%	7.6%	8.3%	9.1%	20.5%
Funding to EHRs in physician practices	Overall n=434	63.8%	13.8%	3.9%	6.9%	6.5%	3.0%
	Users n=171	11.1%	29.6%	21.6%	18.5%	12.3%	6.8%
	Planners n=107	71.0%	20.6%	2.8%	2.8%	1.9%	0.9%
	Nonplanners n=156	67.9%	9.0%	2.6%	4.5%	6.4%	3.8%
Clinical messaging between providers	Overall n=395	9.4%	23.3%	26.1%	17.7%	14.9%	8.4%
	Users n=162	11.4%	24.7%	22.4%	20.9%	12.9%	7.6%
	Planners n=100	7.0%	15.0%	31.0%	18.0%	20.0%	9.0%
	Nonplanners n=133	9.0%	21.8%	27.8%	16.5%	14.3%	9.8%
Claims based patient summary	Overall n=387	3.4%	13.4%	20.9%	24.3%	23.8%	14.0%
	Users n=157	3.2%	19.1%	20.4%	18.5%	23.6%	15.3%
	Planners n=98	2.0%	12.2%	22.4%	22.4%	26.5%	14.3%
	Nonplanners n=132	4.5%	7.6%	20.5%	32.6%	22.0%	12.1%
Consumer health records	Overall n=391	8.2%	13.6%	21.7%	22.0%	23.3%	11.0%
	Users n=161	11.8%	12.4%	21.1%	19.9%	21.7%	13.0%
	Planners n=97	5.2%	11.3%	19.6%	28.9%	25.8%	9.3%
	Nonplanners n=133	6.0%	16.5%	24.1%	19.5%	23.3%	9.8%

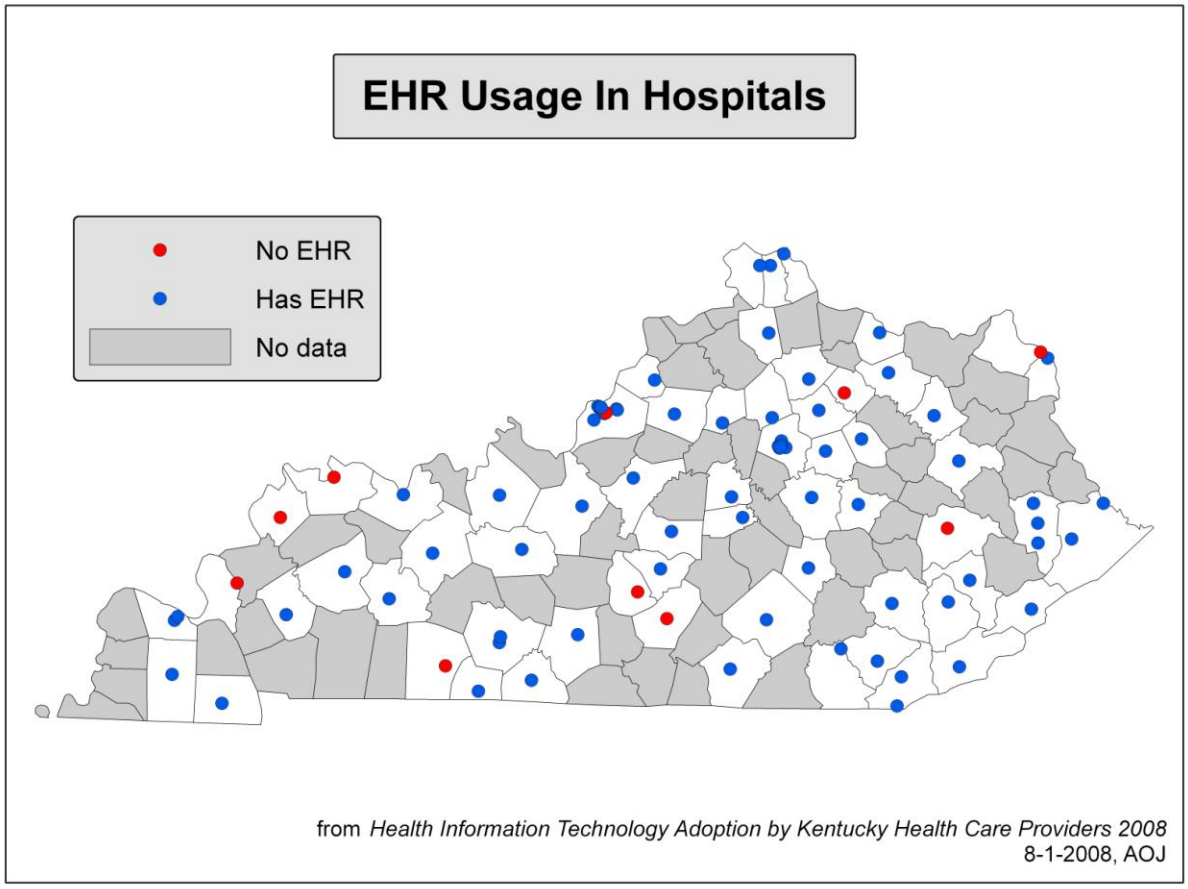
RHIOs or HIEs	Overall n=374	5.3%	7.0%	20.9%	14.7%	17.4%	34.5%
	Users n=151	6.0%	7.3%	27.8%	16.6%	13.2%	29.1%
	Planners n=98	2.0%	6.1%	12.2%	14.3%	17.3%	48.0%
	Nonplanners n=125	7.2%	7.2%	19.2%	12.8%	22.4%	60.4%

Percentage totals may not equal 100 due to rounding.

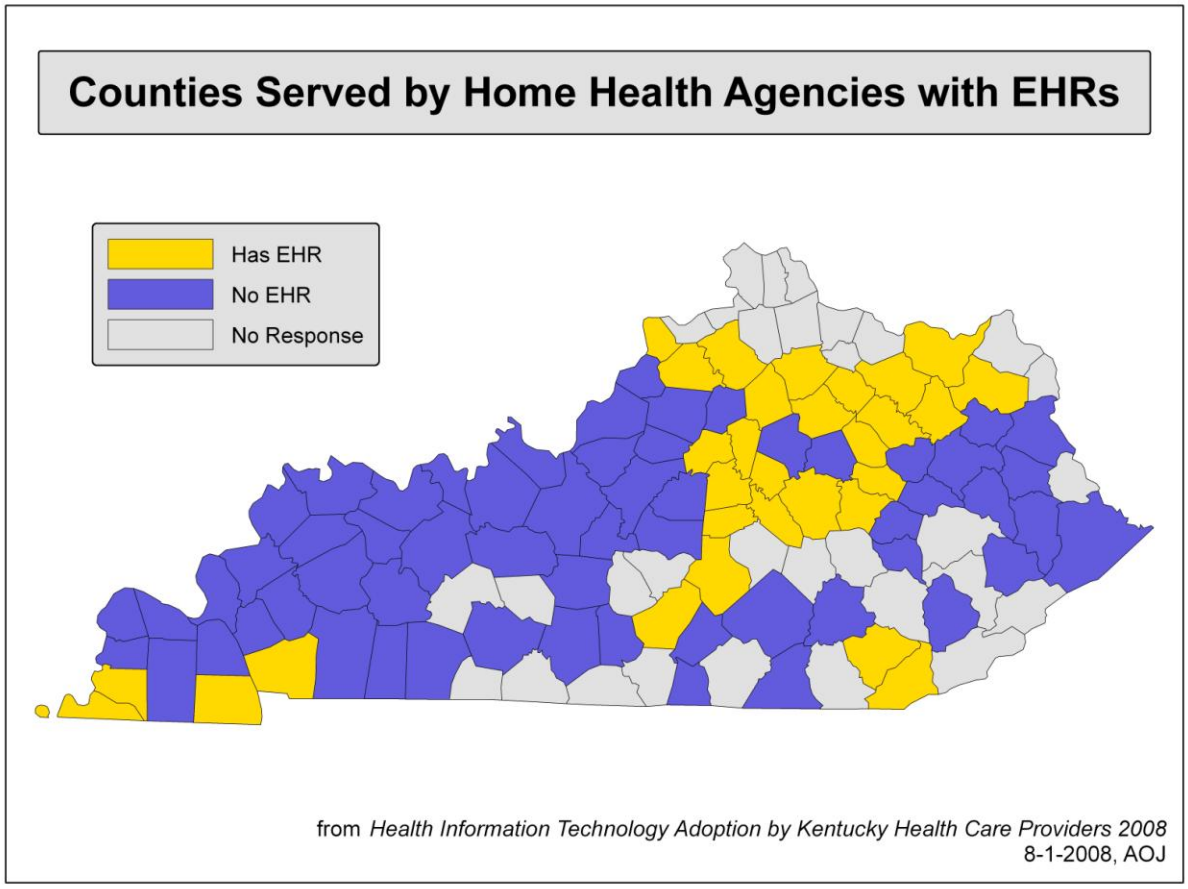
Appendix E


Hospital Based* Physicians w/EHR Access by County
0
1 - 9
10 - 19
20 - 400
* Self-selected in KBML list
from Health Information Technology Adoption by Kentucky Health Care Providers 2008
8-1-2008, AOJ

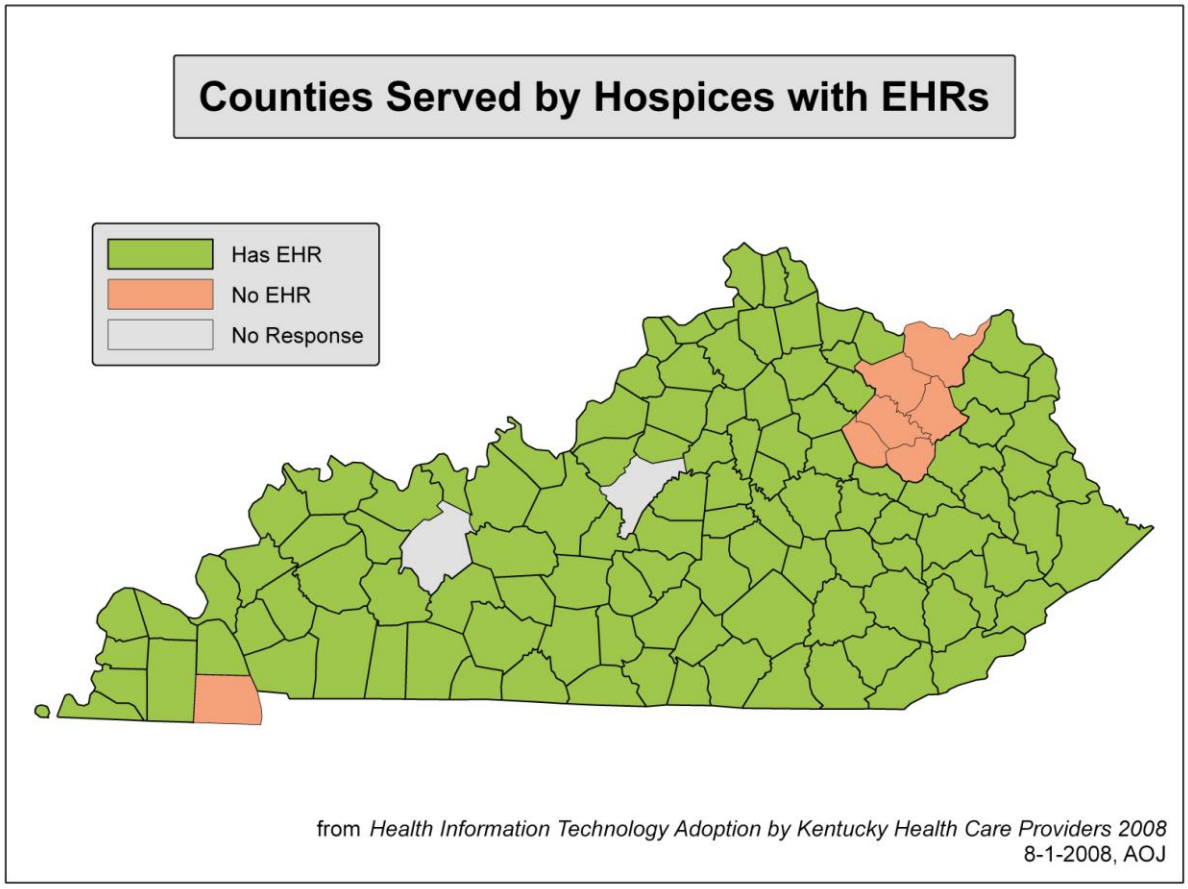
Appendix F


EHR Usage In Hospitals
No EHR
Has EHR
No data
from Health Information Technology Adoption by Kentucky Health Care Providers 2008
8-1-2008, AOJ

Appendix G


Counties Served by Home Health Agencies with EHRs
Has EHR
No EHR
No Response
from Health Information Technology Adoption by Kentucky Health Care Providers 2008
8-1-2008, AOJ

Appendix H


Counties Served by Hospices with EHRs
Has EHR
No EHR
No Response
from Health Information Technology Adoption by Kentucky Health Care Providers 2008
8-1-2008, AOJ

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